

SOP 26 – Perchloric Acid

- A. At room temperature perchloric acid solutions (72%) acts as strong non-oxidizing acid solutions. At elevated temperature ($>160^{\circ}\text{C}$), perchloric acid is an extremely strong and active oxidizer as well as a dehydrating agent. Contact between perchloric acid and combustible material at elevated temperatures may cause a fire or explosion.
- B. Anhydrous perchloric acid is unstable at room temperature and decomposes spontaneously, producing a violent explosion. Contact with any oxidizable material can cause an immediate explosion.
- C. Perchloric acid is used only in exhaust hoods (stainless steel) reserved for such use. These hoods have a stack wash system and should be washed down once a week during heavy acid use to remove any residue. During frequent use the hoods should be washed down once a month. Perchloric acid containers are normally glass bottles; PVC or other plastic safety coatings on these bottles are incompatible with perchloric acid and could be dangerous. Since these glass bottles have little safety protection, great care must be taken when transporting perchloric acid. Always use a safety carrier.
 - 1. None of our three units currently has a hood equipped to handle perchloric acid.
- D. Store perchloric acid in a metal storage cabinet segregated from all other chemicals and inside secondary containment (such as a pyrex baking dish or plastic dish pan). It must not be stored near organic acids such as acetic acid, near bases, or near other organic or flammable material. The acid should be inspected periodically and if discolored, should be properly disposed of (consult the MSDS). If crystal formation is noted on or near the perchloric acid bottle-cap area, do not attempt to open the bottle. Consult your supervisor immediately.
- E. Perchloric acid digestions of any size must be performed in a perchloric fume hood. No organic solvents should be in the hood during the digestion. When performing digestions with perchloric acid, wear a lab coat, apron, face shield and gloves. Always use the minimum amount of perchloric acid required to digest samples. When using sulfuric acid - perchloric acid mixtures, dehydration can occur and anhydrous perchloric acid is a potential product. The digestion of any sample should be done with nitric acid first to remove any easily oxidizable substances.
- F. Verify that you and other laboratory personnel understand emergency exiting procedures, routes, and gathering points.